

What is claimed is:

1. A network testing apparatus for performing network simulation tests and traffic tests in alternative modes, the network testing apparatus comprising:

a software module, comprising:

a network simulating database for storing a plurality of network simulating models;

a network protocol database for storing a plurality of network protocols;

a simulation processing module; and

a traffic generation controlling module;

a hardware module, comprising:

a traffic generating apparatus; and

a media access control; and

a plurality of communication ports.

2. The network testing apparatus of claim 1, wherein the network testing apparatus is operated in either of two modes: a network simulating test mode or a traffic generator operating mode.

3. The network testing apparatus of claim 2, wherein when the network testing apparatus is in the network simulating test mode, the simulation processing module is used for selecting a network simulating model and a network protocol, and for generating a first traffic generating command to control traffic generation of the traffic generating apparatus.

4. The network testing apparatus of claim 3, wherein the traffic generating apparatus is used for generating traffic according to the first traffic generating command.

5. The network testing apparatus of claim 4, wherein the media access control is used for transmitting the generated traffic to a corresponding communication port.

6. The network testing apparatus of claim 2, wherein when the network testing

apparatus is in the traffic generator operating mode, the traffic generation controlling module is used for generating a second traffic generating command to control traffic generation of the traffic generating apparatus.

7. The network testing apparatus of claim 6, wherein the traffic generating apparatus is used for generating traffic according to the second traffic generating command.

8. The network testing apparatus of claim 7, wherein the media access control is used for transmitting the generated traffic to a corresponding communication port.

9. A network testing system for performing network simulation tests and traffic tests, the network testing system comprising:

- at least one administrative workstation, comprising:

- a simulation test controlling module;

- a traffic generating parameter designing module; and

- a network model designing module for designing the network simulating model, and for transmitting the designed network simulating model;

- a network testing apparatus, comprising:

- a software module, comprising:

- a network simulating database for storing a plurality of network simulating models;

- a network protocol database for storing a plurality of network protocols;

- a simulation processing module; and

- a traffic generation controlling module;

- a hardware module, comprising:

- a traffic generating apparatus; and

- a media access control; and

- a plurality of communication ports; and

- at least one network device connected to the network testing apparatus.

10. The network testing system of claim 9, wherein the at least one administrative workstation is connected to the network testing apparatus through a network.

11. The network testing system of claim 9, wherein the at least one administrative workstation is connected to the network testing apparatus directly.

12. The network testing system of claim 9, wherein when the network testing apparatus is in the network simulating test mode, the simulation test controlling module is for selecting simulation test parameters, and for transmitting the simulation test parameters to the network testing apparatus.

13. The network testing system of claim 12, wherein the simulation processing module is for receiving the simulation test parameters, for selecting a network simulating model and a network protocol according to the simulation test parameters, and for generating a first traffic generating command to control traffic generation of the traffic generating apparatus for performing network simulation tests.

14. The network testing system of claim 12, wherein the simulation test parameters comprises the network simulating model, the network protocol, and the first traffic generating parameters.

15. The network testing system of claim 9, wherein when the network testing apparatus is in the traffic generator operating mode, the traffic generating parameter designing module is for inputting the second traffic generating parameters, and for transmitting the second traffic generating parameters to the network testing apparatus.

16. The network testing system of claim 15, wherein the traffic generation controlling module is for receiving the second traffic generating parameters, and for generating a second traffic generating command to control traffic generation of the traffic generating apparatus for performing traffic tests according to the second

traffic generating parameters.

17. The network testing system of claim 15, wherein the second traffic generating parameters comprise traffic rate, packet content and packet length.

18. A network testing method for performing either network simulation tests or traffic tests by using a network testing apparatus, the network testing method comprising the steps of:

- a) setting the network testing apparatus in a network simulating test mode or a traffic generator operating mode;
- b) when the network testing apparatus is set in the network simulating test mode:
  - b1) setting simulation test parameters, and transmitting the simulation test parameters to the network testing apparatus; and
  - b2) receiving the simulation test parameters, selecting a network simulating model and a network protocol according to the simulation test parameters, and controlling traffic generation to perform network simulation tests.

19. The network testing method of claim 18, further includes a step of:

- c) when the network testing apparatus is set in the traffic generator operating mode:
  - c1) setting second traffic generating parameters; and
  - c2) receiving the second traffic generating parameters, and controlling traffic generation to perform traffic tests according to the second traffic generating parameters.

20. The network testing method of claim 18, wherein step b) further comprises the steps of:

- designing the network simulating model;
- transmitting the designed network simulating model to the network testing apparatus; and
- storing the network simulating model in a network simulating database.

21. The network testing method of claim 18, wherein the network testing apparatus is communicatively located between a tested equipment and a network which said tested equipment is connected to.